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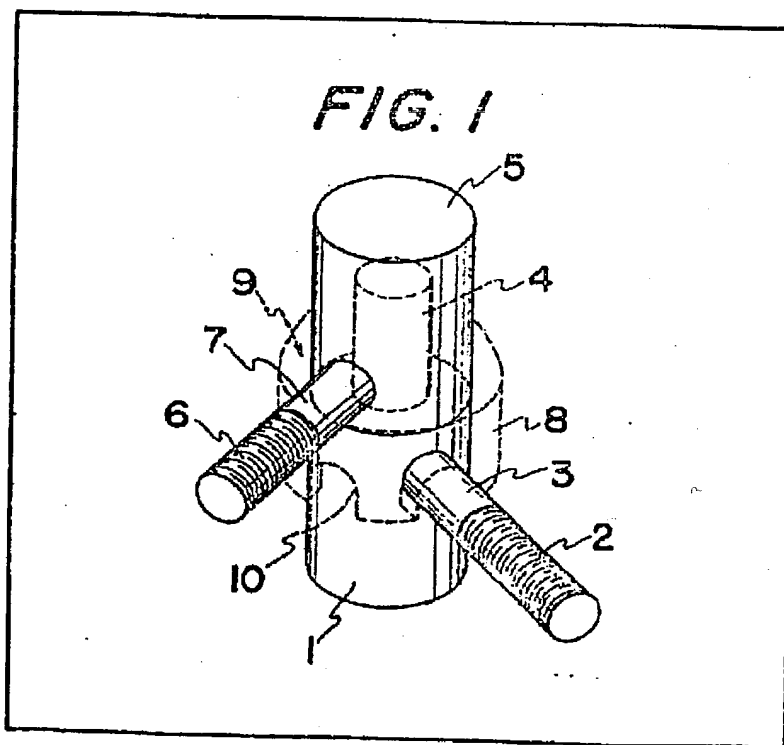
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## (54) Improvements in or Relating to Rising Hinges

(57) A rising hinge comprises a first knuckle 1, a second knuckle 5 and a controlling tube 8.

The first knuckle 1 has a laterally extending connecting rod 3 for connection to a frame and a pivot 4 on its top. The second knuckle 5 has a laterally extending connecting rod 7

for connection to a door and is mounted on the first knuckle 1 so as to be pivotable around and movable vertically along the pivot 4. The controlling tube 8 is disposed between the two rods 3, 7 and engaged with rod 3 to prevent rotation on the knuckle 1, so as to control vertical movement of the knuckle 5 by cooperation between the rod 7 of the knuckle 5 and a cam surface 9 on the controlling tube 8.



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## SPECIFICATION

## Improvements in or Relating to Gravity Hinges

This invention relates to gravity hinges, which may be simple and inexpensive and which may be used for doors. Gravity hinges enable an opened door to shut automatically under its weight.

The mechanisms of known gravity hinges are so complicated that their installation and adjustment are not easy. Further, they are costly.

According to the invention, there is provided a gravity hinge comprising a first knuckle provided with a laterally extending connecting rod for connection to a frame and with a pivot on its top, a second knuckle provided with a laterally

extending connecting rod for attachment to a door mounted upon the first knuckle so as to be pivotable around and movable vertically along the pivot, and a controlling tube disposed between the two laterally extending connecting rods so as to control vertical movement of the second knuckle, together with a door when mounted thereon, by cooperation of the laterally extending connecting rod of the second knuckle and a tapered surface at one end of the controlling tube.

The laterally extending connecting rod of the second knuckle may be directly in contact with the tapered surface on top of the controlling tube. Alternatively, the controlling tube may be divided into upper and lower portions. The bottom of the upper and the top of the lower portion may be similarly tapered. The laterally extending connecting rod of the second knuckle may engage with the upper portion of the controlling tube so that, when the door is opened, the upper portion together with the second knuckle and the door are lifted along the pivot. The laterally extending connecting rod of the first knuckle may engage with the lower portion of the controlling tube so as to prevent the lower portion from rotating.

The invention will be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a gravity hinge constituting a preferred embodiment of the invention, in which a controlling tube is shown in dotted lines;

Figure 2 shows a perspective view of the controlling tube;

Figures 3 and 4 are plan views of the gravity hinge, a door and framework in the closed position in Figure 3 and in the opened position in Figure 4;

Figure 5 is a plan view of a controlling tube;

Figure 6 is a side view of the controlling tube of Figure 5;

Figure 7 is a plan view of another controlling tube;

Figure 8 is a side view of the controlling tube of Figure 7;

Figure 9 is a plan view of yet another controlling tube; and

Figure 10 is a side view of the controlling tube of Figure 9.

With reference to Figures 1 to 8, a preferred

65 gravity hinge comprises:

a knuckle for attachment to a frame and provided with a pivot on its top and a laterally protruding connecting rod 3 with a threaded portion 2;

70 a knuckle 5 for attachment to a door and arranged to be mounted on the knuckle 1 so as to be rotatable around the pivot and to be movable up and down along the pivot, the knuckle 5 being provided with a laterally protruding connecting rod 7 with a threaded portion 6; and

a controlling tube with a tapered top 9 provided with a vertical slit or slots at its bottom.

When the knuckles 1 and 5 and the controlling tube 8 are assembled as shown in Figure 1, the lateral connecting rod 7 is directly in contact with the tapered top 9 of the controlling tube 8 and the lateral connecting rod 3 of the frame attaching knuckle 1 is inserted into one of the slits 10 so as to prevent the controlling tube 8 from rotating.

85 In use, the gravity hinge is installed as shown in Figure 3 wherein the lateral connecting rod 3 is obliquely inserted into a side frame F and the lateral connecting rod 7 is obliquely inserted into a wooden door D.

90 Figure 3 shows the door D closed and Figure 4 shows the door D opened, respectively. By opening the door D, the lateral connecting rod 7 ascends the tapered surface 9 of the controlling tube 8 so that the knuckle 5 together with the door D are lifted along the pivot 4. When released, the door D automatically returns to the closed position under the influence of the weight of the door. With the controlling tube 8 shown in Figures 2, 5 and 6, wherein the top is tapered to one direction only, the door can turn from the closed point C to the opened point O or about 135°. If the top 9' of the controlling tube 8' is tapered in two opposite directions as shown in Figures 7 and 8, the door can turn in a range C-O of about 90°.

100 A modified controlling tube is shown in Figures 9 and 10, wherein the controlling tube is divided into upper portions 8A and lower portions 8B. The upper portion 8A is provided with slots 10 to be engaged by the lateral connecting rod 7 of the door knuckle 5. The lower portion 8B is provided with slots 10 to be engaged by the lateral connecting rod 3 of the knuckle 1 so as to prevent the lower portion 8B from rotation. The bottom of the upper portion 8A and the top of the lower portion 8B are tapered similarly to two directions. With this controlling tube, the door can turn from C to O through about 90°.

The gravity hinge is applicable to all sorts of doors whether they may be inward or outward opening, or whether they be left or right handed due to the provision of double slits 10 for engagement by the lateral connecting rod 3 of the knuckle 1, and of tapered surfaces 9, 9' or 11.

125 If desired, the apexes of the tapered surfaces may be somewhat flattened or recessed so as to retain the lateral connecting rod 7 of the knuckle 5 at the highest position so as to maintain the door at the fully opened position.

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Thus, the mechanism of the preferred gravity hinge is simple and always operates properly.

#### Claims

1. A gravity hinge comprising a first knuckle provided with a laterally extending connecting rod for connection to a frame and with a pivot on its op, a second knuckle provided with a laterally extending connecting rod for attachment to a door and mounted upon the first knuckle so as to be pivotable around and movable vertically along the pivot, and a controlling tube disposed between the two laterally extending connecting rods so as to control vertical movement of the second knuckle, together with a door when mounted thereon, by cooperation of the laterally extending connecting rod of the second knuckle and a tapered surface at one end of the

controlling tube.

20 2. A gravity hinge as claimed in claim 1, wherein the controlling tube is divided into two portions, an upper portion of which is arranged to be rotated by means of the laterally extending connecting rod of the second knuckle and a lower portion of which is prevented from rotation by engagement with the laterally extending connecting rod of the first knuckle, the adjacent end surfaces of the upper and lower portions being tapered similarly.

25 3. A gravity hinge substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings

30 4. An item of furniture having a door connected to a door frame by a gravity hinge as claimed in any one of the preceding claims.

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FIG. 1

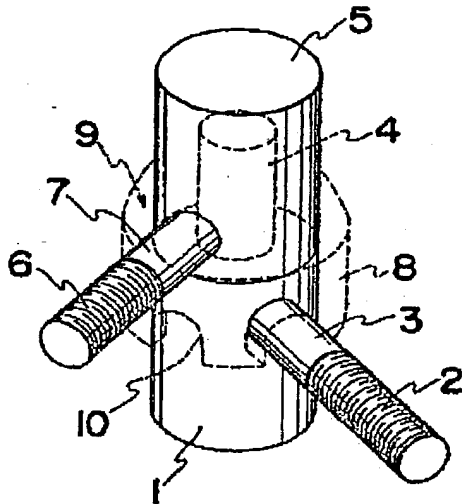


FIG. 2

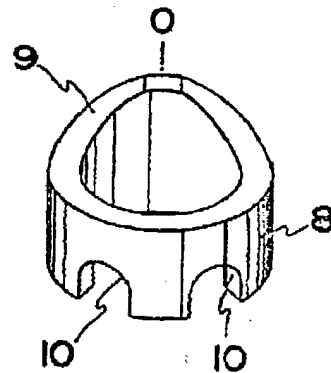


FIG. 3

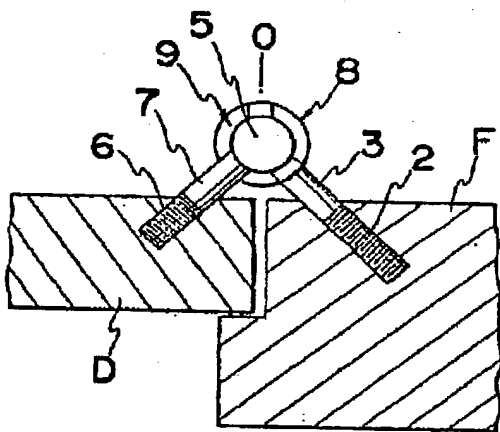
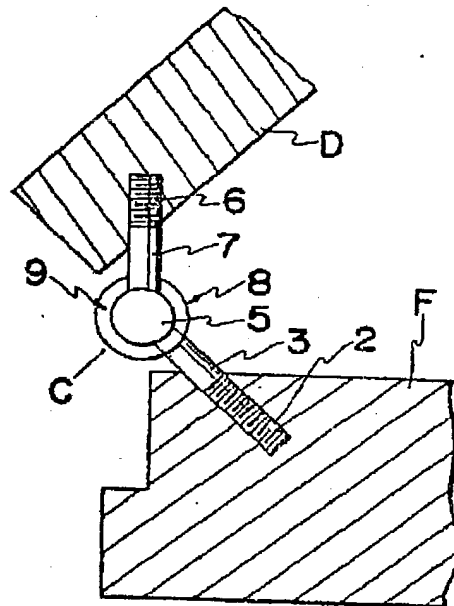


FIG. 4



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FIG. 5

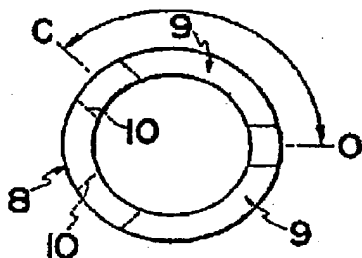


FIG. 7

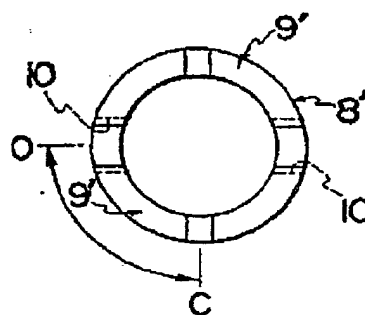


FIG. 6

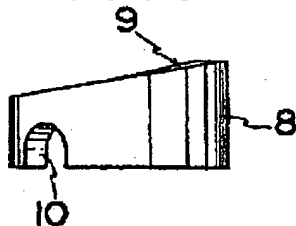


FIG. 8

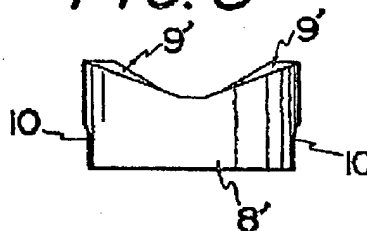


FIG. 9

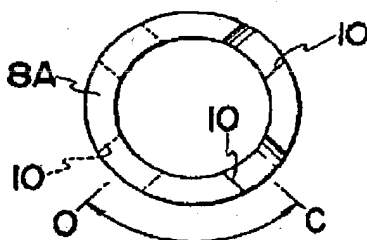


FIG. 10

